

Exhibit A

**FILED UNDER
SEAL**



Leopold, Noah
MRN: 7-451-896, DOB: 10/10/1982, Sex: M
Visit date: 8/29/2023

08/29/2023 - Clinical Communication in William J. von Liebig Center for Transplantation and Clinical Regeneration in Rochester, Minnesota

Visit Information

Provider Information

Encounter Provider

Dwyer, Hope L, R.N., C.C.T.C.

Department

Name	Address	Phone	Fax
William J. von Liebig Center for Transplantation and Clinical Regeneration in Rochester, Minnesota	200 1ST ST SW Rochester MN 55905-0001	800-422-6296	507-266-0731

Reason for Visit

Chief Complaint

- Transplant Organ Offer, onset date 8/29/2023

Clinical Notes

Telephone Encounter

Telephone Encounter by Dwyer, Hope L, R.N., C.C.T.C. at 8/29/2023 7:25 AM

Author: Dwyer, Hope L, R.N., C.C.T.C.

Service: TXP Heart

Author Type: Registered Nurse

Filed: 8/29/2023 7:43 AM

Encounter Date: 8/29/2023

Status: Signed

Editor: Dwyer, Hope L, R.N., C.C.T.C. (Registered Nurse)

I contacted Noah Leopold 7-451-896 by phone to discuss the following and obtain consent.

You have been offered an organ from a donor with risk factors for the development of acute Hepatitis B, Hepatitis C or HIV infection. You are not obligated to accept this organ and refusal will not affect your priority for another organ. Please understand the following:

- All organ donors undergo testing for these viral diseases close to the time of donation. The risk for undetected HIV, HBV, or HCV infection developing after this testing is very low but not zero.
- Recipients will be tested for HIV, HBV, and HCV infections after transplantation and should transmission occur, effective therapies are available.
- Transplant candidates might have a higher chance of survival by accepting organs from donors with risk factors for HIV, HBV, and HCV infections compared with waiting for an organ from a donor without recognized risk factors.

Based upon this discussion, the patient or their delegate wishes to discuss further with the provider. Dr. Rosenbaum was notified and will discuss with the patient.

Electronically Signed by Dwyer, Hope L, R.N., C.C.T.C. on 8/29/2023 7:43 AM

08/29/2023 - Clinical Communication in William J. von Liebig Center for Transplantation and Clinical

1/19/2024 1:42 PM CST

User: 117036

Release ID: 397071051

Page 1113

Confidential

Mayo_Leopold_0001114



08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 1 of 12) (continued)

09/07/2023	Abdominal Exploration, Evacuation Hemoperitoneum, Abdominal Packing, Temporary Abdominal Closure	Joseph T, M.D. Carroll, Joseph T, M.D.Gudmundsdottir, Hallbera, M.D.Bocchinfuso, Sara N, M.B., B.Ch., B.A.O.	RST ROMB OR
09/07/2023	TRANSPLANT HEART, PLACEMENT EXTRACORPOREAL MEMBRANE OXYGENATION	Villavicencio Theoduloz, Mauricio A, M.D.Chauhan, Akshay, M.B.B.S.	RST ROMB OR

DISCHARGE DISPOSITION

Expired [20]

DETAILS OF HOSPITAL STAY

REASON FOR ADMISSION

Chronic Systolic (Congestive) Heart Failure (HCC)
Pretransplant Recipient Evaluation Exam
Pulmonary Hypertension Due To Left Heart Disease (HCC)
Congestive Heart Failure (HCC)

HOSPITAL COURSE

Mr. Leopold is a pleasant 40 year old Florida CPA with a PMH of adriamycin induced cardiomyopathy who presented to the cath lab on 8/16/23 for RHC and IABP placement. Inotropes were initiated and he was listed for heart transplantation on 8/16/23.

Pertinent past medical history includes Ewing sarcoma (diagnosed and treated at age 7 with Adriamycin), subsequent long standing nonischemic dilated cardiomyopathy (since approximately 1990), biopsy-proven cirrhosis, secondary pulmonary hypertension, pulmonary embolism (2/2023), restrictive lung disease, spontaneous pneumothoraces, chronic atrial fibrillation with prolonged pauses requiring permanent pacemaker placement with CRT-D upgrade (in the setting of tachy-brady syndrome and EF of approximately 36%), elevated parathyroid hormone, CKD, and anxiety.

Mr. Leopold's hospital course has been complicated by a left axillary balloon rupture on the evening of 8/16 with IABP replacement 8/17. On 8/19, Mr. Leopold developed a left-sided spontaneous pneumothorax for which the Interventional Pulmonology team placed a left-sided pigtail catheter (subsequently removed 8/22). On 8/23, the IABP



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08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 1 of 12) (continued)

balloon ruptured (second time), with replacement in the cardiac cath lab the same day. His renal indices improved and stabilized and he continued to be UNOS status 2 listed for heart transplantation.

On 8/29/23, a suitable donor became available, and he proceeded to the operating room for orthotopic heart transplant with Dr. Villavicencio.

A suitable organ was procured for transplant on 8/29 and he proceeded to the OR with Dr. Villavicencio for heart transplantation.

Hospital Course

ICU: Mr. Noah Leopold arrived to the ICU following transplant cardiectomy and on Bi-VAD/ECMO support with an open chest. He was promptly re-listed for cardiac transplant. He returned to the OR on 8/31 for washout and chest closure. He returned to the ICU where sedation was stopped. He developed right upper extremity myoclonic movements and right deviated gaze which spontaneously resolved. Neurology was consulted to assess for seizure activity. While awaiting EEG monitoring his mean arterial pressure acutely dropped and the Bi-VAD's were unable to flow. He returned to the OR for reconfiguration of mechanical support. He returned to the ICU on VA ECMO. Chest tube output remained high and chest xray demonstrated right hemothorax, so his chest was subsequently washed out. Upon awakening, he was able to follow commands but demonstrated possible focal status epileptic activity in the form of right hand tremors. Neurology recommended continuing Keppra and propofol.

Renal function continued to decline and he required escalating doses of diuretics without improvement in urine output. Nephrology initiated continuous renal replacement therapy on 9/3. He developed rising lactatemia and a firm abdomen.

General Surgery performed an exploratory laparotomy on 9/6 with findings of 1 liter of ascites fluid with no evidence of bowel ischemia or bleeding. His abdomen was left open and covered with a wound vac. Due to coagulopathy he required the massive transfusion protocol following the procedure.

On 9/4, a second suitable donor was identified and he proceeded to the operating room for orthotopic heart re-transplant on 9/7 and arrived back to the unit on VA ECMO. His coagulopathy was treated with multiple blood products postoperatively.

On the morning of 9/8 his pupils were noted to be fixed and dilated prompting a head CT as well as Neurology and Neurosurgery consultations. Imaging showed extensive intracranial hemorrhage and diffuse cerebral edema. On neurologic exam he demonstrated no motor or brainstem reflexes despite being off sedation for several hours, raising concern for brain death. The Neurosurgery team determined there was no intervention, medical nor surgical, that would reverse the catastrophic intracranial sequelae. On 9/9 the multi-disciplinary team, lead by Neurosurgery conducted formal brain death testing. The multi-step exam and carbon dioxide testing confirmed brain death. Support was withdrawn and Noah Leopold was pronounced at 17:51 on 9/9/2023.

SURGICAL PROCEDURE(S)

Procedure Information: 8/30/23



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08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 1 of 12) (continued)

- #1 Heart Failure NOS
- #2 Cardiomyopathy (HCC)
- #3 Chronic Kidney Disease NOS
- #4 Depression Personal History
- #5 Cirrhosis Nonalcoholic (HCC)
- #6 Attention Deficit Hyperactive Disorder
- #7 Pretransplant Recipient Evaluation Exam
- #8 Pulmonary Hypertension Due To Left Heart Disease (HCC)
- #9 Congestive Heart Failure (HCC)
- #10 Anxiety
- #11 Insomnia

Noah arrives to the CICU in stable condition. The axillary IABP is in good position and is functioning appropriately. His CI after IABP placement was 1.67 so we will plan to add Milrinone to augment his output. We will start low and titrate up slowly given his baseline hypotension. We will consider addition Dopamine if his hypotension becomes significant. We will start him on Heparin to prevent thrombosis with the IABP in place. For tonight we will hold off additional diuresis. He does have some questions/concerns regarding the process and would like to get some counseling. We will plan to have the transplant social worker visit with him tomorrow.

Bradley Ternus, M.D.
Cardiovascular Critical Care
P:82988

Electronically Signed by Ternus, Bradley W, M.D. on 8/16/2023 5:31 PM

H&P by Bentley, Angela, APRN, C.N.P., M.S.N. at 8/16/2023 4:42 PM

Author: Bentley, Angela, APRN, C.N.P., M.S.N.	Service: CVD (Cardiovascular Diseases)	Author Type: Nurse Practitioner
Filed: 8/16/2023 6:29 PM	Date of Service: 8/16/2023 4:42 PM	Status: Signed
Editor: Bentley, Angela, APRN, C.N.P., M.S.N. (Nurse Practitioner)		

Collaborating physician: Anavekar, Nandan S, M.B., B.Ch.
Admitting service: RST CCM CVD CICU

CHIEF COMPLAINT/REASON FOR VISIT

Admission for listing of active cardiac transplant s/p RHC and IABP placement in cath lab.

HISTORY OF PRESENT ILLNESS

Mr. Leopold is a 40 y.o. male who has a history of chemotherapy induced cardiomyopathy following treatment for Ewing sarcoma with Adriamycin at age seven. He was found to have cardiomyopathy he estimates in 1990 and was treated for many years in Miami Florida. He also has history of pulmonary hypertension with moderate restriction, liver



08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 9 of 12) (continued)

Attestation signed by Rosenbaum, Andrew N, M.D. at 8/29/2023 1:11 PM

This is a supervisory note for Dr. Singh. I agree with the interval history, examination and plan as documented, except as otherwise specified in my note. I have also personally seen and evaluated Mr. Leopold and performed an independent history and physical examination. I have reviewed relevant vital signs, clinical, laboratory and imaging data. I have discussed care of the patient on multidisciplinary team rounds.

No events overnight. Stable hemodynamics on intra-aortic balloon pump therapy. No excessive atrial tachycardia. Dopamine continues at 2.5 mcg. Positive 185 cc yesterday. CBC stable. INR 1.4. Creatinine 1.11

- 6. Cardiogenic shock secondary to heart failure in the context of 2, currently supported with axillary IABP (2 failed balloons due to rupture)**
- 7. Adriamycin induced cardiomyopathy with left ventricular ejection fraction 36%.**
- 8. Secondary pulmonary hypertension**
- 9. Restrictive lung disease with cystic disease not concerning for infectious process**
- 10. History of pulmonary embolism**
- 11. Advanced fibrosis stage 3-4/4 on liver biopsy with no cirrhotic physiology**
- 12. Chronic kidney disease stage 3 with elevated parathyroid hormone**
- 13. Chronic atrial fibrillation requiring permanent pacemaker placement status post CRT D upgrade**
- 14. Recurrent atrial arrhythmias previously on amiodarone, exacerbated by high-dose dopamine**
- 15. Listed for cardiac transplantation, status 2 (Blood group a, cPRA 0)**

Mr. Leopold well supported intra-aortic balloon pump therapy. This morning, was suitable donor offer became available for Mr. Leopold. Although some initial hesitation, he was amenable to proceeding with this meets risk criteria donor. Standard prophylaxis. Basiliximab induction. OR time was later this evening. Many questions answered.

The following information was conveyed:

You have been offered an organ from a donor with risk factors for the development of acute Hepatitis B, Hepatitis C or HIV infection. You are not obligated to accept this organ and refusal will not affect your priority for another organ. Please understand the following:

- All organ donors undergo testing for these viral diseases close to the time of donation. The risk for undetected HIV, HBV, or HCV infection developing after this testing is very low but not zero.
- Recipients will be tested for HIV, HBV, and HCV infections after transplantation and should transmission occur, effective therapies are available.
- Transplant candidates might have a higher chance of survival by accepting organs from donors with risk factors for HIV, HBV, and HCV infections compared with waiting for an organ from a donor without recognized risk factors.

Based upon this discussion, the patient or their delegate consented to receive this organ.



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Adm: 8/16/2023, D/C: 9/9/2023

08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 12 of 12) (continued)

Electronically Signed by Zieminski, Joseph J, Pharm.D., R.Ph. on 8/18/2023 1:40 PM
Electronically Signed by Disdier Moulder, Magali P, Pharm.D., R.Ph. on 8/18/2023 4:47 PM

Progress Notes by Ternus, Bradley W, M.D. at 8/18/2023 1:03 PM

Author: Ternus, Bradley W, M.D.	Service: CVD (Cardiovascular Diseases)	Author Type: Physician
Filed: 8/18/2023 1:07 PM	Date of Service: 8/18/2023 1:03 PM	Status: Signed
Editor: Ternus, Bradley W, M.D. (Physician)		

This is a supervisory note. I have personally seen and evaluated Mr. Leopold in the CICU.

The patient was critically ill during the time that I saw the patient. The Critical Care Time excluding procedures was 35 minutes.

Today is CICU day 2.

Mr. Leopold is a 40 y.o. male with a past medical history of chemotherapy induced cardiomyopathy who presented to the cath lab today for RHC and axillary IABP placement prior to transplant listing

Noah has remained stable. The decision was made to turn down the organ offer due to his worsening function. Dopamine has been started with improvement in his hemodynamics. His Cr is starting to trend down.

BP 100/66 | Pulse 88 | Temp 36.3 °C | Resp 14 | Ht 170.2 cm | Wt 58.2 kg | SpO2 94% | BMI 20.10 kg/m²

PAP: (26-262)/(4-257) 52/26

RAP (mean): [0-271] 22

CO: [4 L/min] 4 L/min

CI: [2.41-2.45] 2.45

SV: [48.2 ml/beat-49.6 ml/beat] 49.6 ml/beat

SVI: [29.4 ml/m²/beat-30.3 ml/m²/beat] 30.3 ml/m²/beat

RVSWI: [3.99-6.17] 6.17

LVSWI: [32.4-35] 35

SVR: [1194 (dyne*sec)/cm⁵-1273 (dyne*sec)/cm⁵] 1273 (dyne*sec)/cm⁵

SVRI: [1959 (dyne*sec)/cm⁵-2088 (dyne*sec)/cm⁵] 2088 (dyne*sec)/cm⁵

SpO2: [90 %-100 %] 94 %

Intake/Output Summary (Last 24 hours) at 8/18/2023 1304

Last data filed at 8/18/2023 1300

Gross per 24 hour

Intake 3077.09 ml

Output 3080 ml

Net -2.91 ml



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08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 12 of 12) (continued)

of results can be found in Results Review.

IMAGING:

DX Chest Portable with AM Rounds 1 View

Result Date: 8/17/2023

Impression: Aortic balloon pump with the superior tip at T5 in the descending intrathoracic aorta and the inferior marker at L1-2. Mild cardiomegaly. Partially visualized intact-appearing pacemaker leads. Normal bowel gas pattern. The tip of the Swan-Ganz catheter is in the right pulmonary artery just past the hilum.

DX Chest Portable 1 View

Result Date: 8/16/2023

Impression: Since chest radiograph on 08/07/2023, interval placement of a IABP. The proximal radiographic marker projects over the aortic arch. The distal radiographic marker projects over the left L1 vertebral body. New right IJ Swan-Ganz catheter with tip in the right pulmonary artery. This could be retracted slightly. No pneumothorax. Mild cardiomegaly. AICD. Old left rib fracture.

ASSESSMENT / PLAN

End-stage anthracycline induced cardiomyopathy after Ewing's sarcoma treatment in childhood, listed status 2 for cardiac transplantation

Atrial fibrillation requiring permanent pacemaker and CRTD upgrade

Secondary pulmonary hypertension, PVR 3 with CI 1.4s

Cardiorenal syndrome with chronic kidney disease

Noah Leopold is currently status 2 for cardiac transplantation. Unfortunately his first IABP ruptured overnight and was exchange on 8/18/23. His renal function has actually worsened during this hospitalization, potentially due to holding po vasodilators (GDMT) in absence of hemodynamic support from the balloon pump and/or AKI from NPO status for about 16 hours. At this point, he is on IABP and dopamine support which I think will help his renal function improve.

Also his renal function has improved a bit since yesterday, I think that if he would still benefit from further improvement prior to proceeding with transplantation. Although delays in transplantation with presence of MCS has some risks, I think that overall awaiting renal recovery can improve his short and long-term morbidity and mortality. Hence, I think it is the best way to proceed as agreed with my colleague from Cardiac Surgery.

I agree with the current management from the cardiac ICU team.

Electronically Signed by da Silva de Abreu, Adrian J, M.D., Ph.D. on 8/19/2023 9:25 AM

Progress Notes by Rodeheffer, Richard J, M.D. at 8/17/2023 2:21 PM

Author: Rodeheffer, Richard J, M.D.

Service: CVD (Cardiovascular Diseases)

Author Type: Physician

Filed: 8/17/2023 2:29 PM

Date of Service: 8/17/2023 2:21 PM

Status: Signed

Editor: Rodeheffer, Richard J, M.D. (Physician)



Leopold, Noah
MRN: 7-451-896, DOB: 10/10/1982, Sex: M
Adm: 8/16/2023, D/C: 9/9/2023

08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 12 of 12) (continued)

I reviewed the record and visited him at the bedside. I spoke with him and examined him. I spoke with his mother. I have discussed the issues with Dr. Spencer and the surgical team. He has nonischemic dilated cardiomyopathy and is awaiting transplantation. He has been supported since yesterday on a balloon pump. He is afebrile and comfortable. Yesterday in the cath lab RA pressure was 21, PCW 21, and cardiac index 1.6.

On examination today heart sounds are normal without gallop or JVD at 60°. Lungs are clear. Extremities are warm and well perfused without edema.

Assessment and plan:

A donor has been identified for him and we anticipate that he will proceed with transplantation tonight. We will keep him on balloon pump support. His blood group A. Hemoglobin is 14.2, white count 8500, and platelet count 86000. INR is 1.6 and creatinine has come up from 1.8 to 2.8 since yesterday. His most recent PRA is 0%. I would recommend that he not be aggressively diuresed between now and his pump run tonight.

Electronically Signed by Rodeheffer, Richard J, M.D. on 8/17/2023 2:29 PM

Progress Notes by Ou, Narith N, Pharm.D., R.Ph. at 8/17/2023 1:37 PM

Author: Ou, Narith N, Pharm.D., R.Ph.

Service: PHR (Pharmacy)

Author Type: Pharmacist

Filed: 8/17/2023 2:19 PM

Date of Service: 8/17/2023 1:37 PM

Status: Addendum

Editor: Ou, Narith N, Pharm.D., R.Ph. (Pharmacist)

Related Notes: Original Note by Ou, Narith N, Pharm.D., R.Ph. (Pharmacist) filed at 8/17/2023 2:18 PM

Pharmacist Progress Note

Reason for admission: Transplant status 2 on axillary IABP

PMH: Cardiomyopathy EF 36%, PFO, cirrhosis, anxiety

OBJECTIVE

Neuro: Pain-Acetaminophen as needed. GAD-sertraline 50 mg.

CV: Transplant status 2 with axillary IABP, cardiomyopathy EF 36%- low intensity heparin nomogram, off milrinone.

Neph: SCr 2.75 (up from 1.79 yesterday), CrCl 28 mL/min. Furosemide IV intermittently.

ID: Axillary prophylaxis-cefazolin x48 hours

PPX: Heparin

Medication Reconciliation:

- Held: Carvedilol, furosemide, Entresto, spironolactone, zopidem
- Changed: -
- New: Cefazolin, IV heparin

1.

2.

3. **ASSESSMENT / PLAN**

1. Transplant status 2 on axillary IABP

- Low intensity heparin nomogram
- Cefazolin x48 hours post axillary IABP. Suggest changing frequency to Q12h based on reduced renal function (e.g., cefazolin 2 grams Q12H).

4.

5.



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08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Clinical Notes (group 12 of 12) (continued)

Filed: 8/17/2023 4:18 PM

Date of Service: 8/17/2023 7:02 AM

Status: Signed

Editor: Allen, Joy M, APRN, C.N.P. (Nurse Practitioner)

CCU PROGRESS NOTE

SUBJECTIVE

Mr. Leopold is a 40 year old male with a PMH of adriamycin induced cardiomyopathy who was admitted to the CICU 8/16 following right heart cath and left axillary IABP placement with subsequent Status 2 listing for heart transplantation.

Interval Events: Overnight, there was evidence of blood in the helium tube connected to the left axillary IABP. The IABP was turned off and remains clamped. Case was discussed with Dr. Behfar. He is NPO this morning for IABP removal and replacement.

VITAL SIGNS

Temp: 36.4

BP: 93/69

HR: 78 bpm

RR: 17

PHYSICAL EXAM

General: No acute distress.

ENT: PERRLA. EOMs intact. Trachea midline.

Heart: Regular rate, regular rhythm. Left axillary IABP site is CDI (line is clamped). Right IJ PA-C site is without erythema, swelling, or drainage.

Lungs: Non-labored respiratory pattern.

Extremities: No peripheral edema.

Neuro: RASS 0.

LABS (08/17/2023): Sodium 135, potassium 4.7, **creatinine 2.53**, **BUN 49**, magnesium 2.2, phosphorus: 4.8.

ASSESSMENT / PLAN

Mr. Noah Leopold is a 40 y.o. male with a PMH significant for chemotherapy induced cardiomyopathy who was admitted to the CICU 8/16/2023 following right heart cath and left axillary IABP with subsequent Status 2 listing for heart transplantation. Course complicated by IABP tubing rupture overnight 8/17 with plan for IABP removal and replacement the morning of 8/17.

#1 Heart Failure NOS

#2 Cardiomyopathy (HCC)

#3 Chronic Kidney Disease NOS

#4 Depression Personal History

#5 Cirrhosis Nonalcoholic (HCC)



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08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Op Note/Surgical Log (continued)

NAME OF OPERATIONS:

Orthotopic heart transplant
Cardiopulmonary bypass
Cold blood cardioplegia
VA ECMO cannulation, initiation and explantation.
Severe transplanted heart bleeding, cardiectomy
BiVAD+oxygenator implantation in a total artificial heart configuration
Chest open, packing

PREOPERATIVE INDICATIONS: This is a 40 y.o. gentleman with a history of Dilated cardiomyopathy who has progressed to end-stage heart disease. The patient's case has been discussed in the heart transplant multidisciplinary meeting and a decision was made to list him for transplant. He was made status 2 and a suitable organ has now become available.

DONOR VERIFICATION: Organ verification: prior to implantation of the HEART, I personally confirmed the ABO compatibility between the donor and recipient blood types. I verified the UNOS ID of the donor organ which is [AKH1384](#), blood group A. This was identical to our recipient Noah Leopold.

GROSS FINDINGS: There was 4-chamber enlargement of native heart with extremely poor biventricular function. The donor heart had normal anatomy, it was large and had ecchymosis on retrieval out of the OCS device.

The cardiopulmonary bypass time was 178+40+60+147+29 minutes=454 minutes

The total donor organ ischemic time was 126 minutes

Donor cross clamp time 8/29/2023 22:41

Total donor out of the body time 344 minutes

First cold ischemic time 25 minutes

OCS bypass time 254 minutes

Second cold ischemic time 65 minutes

DESCRIPTION OF PROCEDURE: The patient was correctly identified in the holding area, brought to the Operating Room, and placed in the supine position on the operating table. Once I gave word that the donor heart was suitable for transplantation, the patient was anesthetized. He was then shaved, prepped and draped in the usual sterile fashion. Midline sternotomy, vertical pericardiotomy, the cardiac structures were exposed. Once the donor organ was en route back to the hospital, the patient was administered heparin titrated by ACT. He was cannulated via the ascending aorta, the inferior and the superior vena cava. We went on cardiopulmonary bypass allowing mild permissive hypothermia. Caval snares were placed. Once the heart was adequately dissected out, the patient's systemic pressure was temporarily reduced and a cross-clamp was placed. The caval snares were tightened. The heart was then explanted by dividing the superior and inferior vena cava at their junction with the right atrium. The aorta and pulmonary arteries were cut above their respective valves, and lastly, a left atrial cuff was fashioned. The heart was then passed off the table and the recipient cuffs were matured. When the donor heart entered the Operating Room, the compatibility of the donor and recipient blood types and the UNOS ID was again confirmed by me. An steroid bolus was given. The heart was then brought out of the OCS device and prepared for implantation. The heart was ecchymotic as is usually the case after OCS runs. The heart was administered cold antegrade del Nido cardioplegia for a total of 1000 mL in the OCS device and then 500 cc of cold blood cardioplegia on the field.. One more dose of 300 cc was given after 30 minutes. The heart was large and there was significant mismatch. Donor larger than recipient. However, we adjusted the surgical sutures and opened the posterior and left side pericardium to make it fit with good result. The heart was then implanted by first anastomosing the left atrium with running 3-0 Prolene



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Op Note/Surgical Log (continued)

suture. The pulmonary artery anastomosis was then completed with a running 4-0 Prolene suture, followed by the aortic anastomosis with the same suture. The inferior vena caval anastomosis followed again with running 4-0 Prolene suture. De airing maneuvers. The patient's systemic pressure was temporarily reduced, and with high suction applied to the aortic root vent, the cross-clamp was released. A stable spontaneous rhythm resumed without defibrillations. The superior vena caval anastomosis was then completed with running 4-0 Prolene suture.

After the cross clamp was released, it became apparent the heart started having a large amount of blood infiltration and become extremely friable. A minor manipulation of the apex and anterior wall of the RV resulted in disruption of the epicardium and uncontrollable bleeding. Several large 3-0 MH felted sutures were placed and it bled more and started falling apart.

Two right ventricular and 2 right atrial epicardial pacing wires were placed. Again, a large hematoma developed from the pacing wires. Several large 3-0 MH felted sutures were placed and it bled more and fell apart again. The patient was rewarmed, ventilated and the heart was partially loaded with blood and resuscitated on cardiopulmonary bypass. Standard de airing maneuvers were continuously employed. Once the heart was adequately resuscitated, the patient was gradually weaned from cardiopulmonary bypass.

Initially the biventricular function was normal, but the septum and the rest of the heart became massively thick due to hematic infiltration as demonstrated on the TEE and direct examination.

We thought the only way to control the bleeding was to give the protamine and blood products since we thought the bleeding came from microscopic tears from the aortic root perfusion in the OCS.

After protamine the bleeding continued. There was significant coagulopathy. Blood products and more 3-0 MH prolene felted sutures were tried with no success. Hemodynamics became marginal and bleeding continued. Heparinization, we went back on bypass. We thought now to support the patient on ECMO to be able to tolerate the bleeding for a longer period of time. Right groin dissection. The femoral artery is too small for cannulation as typically seen in long standing heart failure. We cannulated to distal ascending aorta between double purse strings and used the right femoral vein to cannulate the vein under TEE guidance. Connection to the VA ECMO Cardiohelp circuit. We came off bypass and transitioned to VA ECMO achieving good flows.

The bleeding continued in spite of protamine, blood products and dozens of sutures. We tried several hours to stop the bleeding but it was a futile effort. We were forced to explant the transplanted heart to be able to control the bleeding. We went back on bypass, cross clamped the aorta and explanted the heart. At this point the explanted heart looked like a large hematoma.

We decided to attempt an BiVAD + oxygenator implantation in an artificial heart configuration to be able to keep the patient alive. We picked 3 aorto bifemoral Dacron grafts and closed with ties/clips one of the femoral limbs at the origin. We picked a 24 mm graft for the pulmonary artery and left atrium, and 22 mm for the aorta. 22 F Eopa arterial cannulas were introduced through the remaining limb of the grafts for the aorta and pulmonary artery, and 34 F venous for the left atrium. These cannulas were secured with heavy silk ties and sterile zip ties at the aortic level of the graft. A bovine pericardial patch was sewn to the left atrial cuff with 4-0 prolene. The aortic portion (24 mm) of the aortobifemoral graft was sewn with 4-0 prolene to an opening in the center of bovine pericardium patch allowing the maximum room for the venous cannula to drain. Now we sewed in similar fashion the Dacron grafts to the aorta and pulmonary artery. These cannulas were exteriorized by counter overture and deaired meticulously. We added a bullet 24 F venous cannula to the superior vena cava by counter overture and kept the right venous femoral cannula from the ECMO circuit for the IVC.

The stump of the SVC was closed primarily with 4-0 prolene double layer. A piece of bovine pericardium was sewn to the IVC stump with 4-0 prolene.

The IVC and SVC cannulas were connected to the Cardiohelp circuit, then pump, oxygenator, outflow and pulmonary artery cannula= RVAD+oxygenator.



08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Op Note/Surgical Log (continued)

The left atrium cannula was connected to a CentriMag circuit, then pump, outflow and aortic cannula= LVAD completing the BiVAD artificial heart configuration. We came off bypass and started the BiVAD flow but we encountered air entry likely from the left atrium needle holes to the LVAD CentriMag circuit. We went back on bypass immediately, clamped the BiVAD and de aired the LVAD circuit. We added sutures to the left atrial anastomosis, flooded the field with saline and packed it with sponges to avoid air entry. We come off bypass again and this time we were able to flow properly with no air entry. Protamine was given. The ascending aorta bypass and ECMO cannulas were explanted and hemostasis achieved. Blood products +++ to reverse the coagulopathy. The flows of the BiVADs were above 3 liters per minute and the mean blood pressure 70 with mild pressor support.

Once hemostasis was adequate, chest tubes were placed. Two in the mediastinum and one on each pleura. The cardiac defibrillator was not pulled to avoid further complications at this time. The mediastinum was packed with 4X4 sponges. The chest was left open. A fish patch was sewn to the skin with Ethilon. The patient was taken intubated in critical stable condition to CSICU for recovery.

Attestation: Accredited resident or fellow assisted in the case, and the consultant was present for the critical portion of the case and was immediately available for the entire case. A first assistant actively participated and was necessary for one or more of the following: opening, exposure and visualization during the case, maintaining hemostasis, wound closure resulting in its safe and expeditious complete

Specimens:

ID	Type	Source	Tests	Collected by	Time
1 :	Device	Catheter Tip, PICC	MYCOBACTERIAL CULTURE, V, BACTERIAL CULTURE, AEROBIC + SUSC	Villavicencio Theoduloz, Mauricio A, M.D.	8/30/2023 12:20 AM
A : explanted heart	Tissue	Heart	SURGICAL PATHOLOGY, FROZEN LAB	Villavicencio Theoduloz, Mauricio A, M.D.	8/30/2023 4:56 AM
B : DONOR HEART	Tissue	Heart, Transplant	SURGICAL PATHOLOGY, FROZEN LAB	Villavicencio Theoduloz, Mauricio A, M.D.	8/30/2023 1:05 PM

Drains: 2 meds, 1 pleural at each side

Estimated Blood Loss: 3 liters

Disposition: Cardiac Surgical ICU



Leopold, Noah
MRN: 7-451-896, DOB: 10/10/1982, Sex: M
Adm: 8/16/2023, D/C: 9/9/2023

08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Case 1515720407 (TRANSPLANT HEART) (continued)

Initially the biventricular function was normal, but the septum and the rest of the heart become massively thick due to hematic infiltration as demonstrated on the TEE and direct examination

We thought the only way to control the bleeding was to give the protamine and blood products since we thought the bleeding came from microscopic tears from the aortic root perfusion in the OCS.

After protamine the bleeding continued. There was significant coagulopathy. Blood products and more 3-0 MH prolene felted sutures were tried with no success. Hemodynamics became marginal and bleeding continued. Heparinization, we went back on bypass. We thought now to support the patient on ECMO to be able to tolerate the bleeding for a longer period of time. Right groin dissection. The femoral artery is too small for cannulation as typically seen in long standing heart failure. We cannulated to distal ascending aorta between double purse strings and use the right femoral vein to cannulate the vein under TEE guidance. Connection to the VA ECMO Cardiohelp circuit. We came off bypass and transitioned to VA ECMO achieving good flows.

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Leopold, Noah
MRN: 7-451-896, DOB: 10/10/1982, Sex: M
Adm: 8/16/2023, D/C: 9/9/2023

08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Documents (group 3 of 3) (continued)

Scan on 8/29/2023 11:24 AM: HPE82540-LN0001065506-NASSEFFT7B_RST_20230829_111

Scan (below)



Surgical Consent

Form content retained in medical record.
Route to HMS Scanning.

TO BE
SCANNED

MRN: 7-451-896 CSN: 2000553741534
Leopold, Noah
DOB: 10/10/1982 (40 yrs) Male Enctr Dt: 8/16/2023
2000553741534

I consent to the following procedure(s): please print

Heart Transplantation and subsequent care

Procedure(s) Will Be Performed By (name of performing or supervising physician or licensed independent practitioner)

Provider Pager

Risks, Benefits, Alternatives: My provider has explained to me the risks, benefits, and nature and consequences of the procedure, along with risk of complications, including, but not limited to failure, serious injury, and even death; the likelihood that I will achieve my goals; and any potential problems that might occur during recuperation. My provider also has explained the alternative viable modes of treatment, their benefits, risks, and effectiveness, as well as the risks and benefits of not undergoing treatment. The likely results of no treatment have been explained to me.

Anesthesia: If an anesthetic is administered, as discussed with my provider, it will be administered through general or regional anesthesia, such as spinal or epidural, or local anesthesia with sedation. I understand that all types of anesthesia involve risk due to unexpected reactions or complications. Potential complications include damage to teeth, mouth or throat, allergic reactions, pneumonia, inflammation of the veins, nerve injury, or paralysis, damage to the heart, liver, kidney or brain, infection, or the possibility of death.

Additional Procedures: I understand that additional procedure(s) may be necessary or desirable during the procedure(s) to treat or evaluate me. It is or may be foreseeable that unanticipated conditions may be revealed that require an extension of the original procedure, so I consent to such additional procedure(s) as are necessary and desirable in my provider's professional judgment.

Health Care Team: I understand that other providers, including physicians-in-training, physician assistants, surgical technicians or others may be involved. They may be identified by name in my medical record. For some surgeries, a provider other than the primary surgeon may perform significant tasks including opening and closing the wound, harvesting grafts, removing tissue, and implanting devices or altering tissues.

Overlapping Operations/Procedures in the Operating Room: I understand that my primary surgeon may be participating in another operative procedure during non-critical portions of my procedure. A qualified surgeon will be available.

Photography and Video: I consent to being photographed or videotaped (the Materials) for purposes of treatment and internal health care operations, such as improving quality of care and educating students and staff. Mayo Clinic may also use and disclose the Materials for educational purposes, such as publication in professional journals and presentations at seminars or conferences, if reasonable steps are taken to remove information about my identity from them.

Transfusion of Red Blood Cells (RBCs), Granulocytes, Platelets, Frozen Plasma (FP), or Cryoprecipitate: As applicable, I have discussed with my provider the possibility of needing a blood transfusion or having autologous blood transfused using cell salvage during my treatment, and the risks and benefits of receiving blood or blood products, and viable medical alternatives. I understand the most common risks include but are not limited to: transfusion reactions such as fever, chills, allergic reaction, hives or shortness of breath, or discomfort at the site of administration. I also understand there is a risk of transfusion transmitted disease such as Hepatitis B, Hepatitis C, or HIV. I have had the opportunity to ask questions.

I consent to receiving all blood or blood products:

☒ Yes ☐ No ☐ Not applicable If "No" is selected, complete Consent and/or Refusal for Blood Products (MC3999-23).

Implants/Explants: If I have an implant/device placed, I authorize personnel to: (1) complete the registry card(s) associated with my implant/device that contains my personal health information; and (2) provide the card to the appropriate registry or data collection agency. I understand that any body tissue and/or medical devices removed during the procedure will be managed according to Mayo Clinic policy.

Exposure: If a Mayo Clinic employee is exposed to my blood or body fluids, I consent to have my blood drawn and tested and to the disclosure of my results to Mayo Clinic Occupational Health and the exposed employee for the purposes of treatment to the employee.

My questions have been answered. By signing below I agree to the procedure(s).

Patient or Representative Signature 	Date (mm-dd-yyyy) 8-29-2023	Time (hh:mm) 11:10	<input checked="" type="checkbox"/> am <input type="checkbox"/> pm
Representative Printed Name (First, Middle, Last) Noah Leopold			
Relationship to Patient Patient			

ENTERPRISE: Applies to Mayo Clinic locations in Arizona, Florida, Rochester and Mayo Clinic Health System.
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MC3999rev1221





Leopold, Noah
MRN: 7-451-896, DOB: 10/10/1982, Sex: M
Adm: 8/16/2023, D/C: 9/9/2023

08/16/2023 - Admission (Discharged) in Mayo Clinic Hospital, Saint Marys Campus, Mary Brigh Building, Fifth Floor (continued)

Documents (group 3 of 3) (continued)



Surgical Consent

Form content retained in medical record.
Route to HIMS Scanning.

TO BE
SCANNED

(complete fields or place patient label here)

MRN: 7-451-896	CSN: 2000553741534
Leopold, Noah	
DOB: 10/10/1982 (40 yrs) Male Entr Dt: 8/16/2023	
2000553741534	

I consent to the following procedure(s): please print <u>Heart Transplant and all related procedures</u>	
Procedure(s) Will Be Performed By (name of performing or supervising physician or licensed independent practitioner) <u>Philip Spencer, M.D.</u>	Provider Pager <u>68003</u>

Risks, Benefits, Alternatives: My provider has explained to me the risks, benefits, and nature and consequences of the procedure, along with risk of complications, including, but not limited to failure, serious injury, and even death; the likelihood that I will achieve my goals; and any potential problems that might occur during recuperation. My provider also has explained the alternative viable modes of treatment, their benefits, risks, and effectiveness, as well as the risks and benefits of not undergoing treatment. The likely results of no treatment have been explained to me.

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Transfusion of Red Blood Cells (RBCs), Granulocytes, Platelets, Frozen Plasma (FP), or Cryoprecipitate: As applicable, I have discussed with my provider the possibility of needing a blood transfusion or having autologous blood transfused using cell salvage during my treatment, and the risks and benefits of receiving blood or blood products, and viable medical alternatives. I understand the most common risks include but are not limited to: transfusion reactions such as fever, chills, allergic reaction, hives or shortness of breath, or discomfort at the site of administration. I also understand there is a risk of transfusion transmitted disease such as Hepatitis B, Hepatitis C, or HIV. I have had the opportunity to ask questions.

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Exposure: If a Mayo Clinic employee is exposed to my blood or body fluids, I consent to have my blood drawn and tested and to the disclosure of my results to Mayo Clinic Occupational Health and the exposed employee for the purposes of treatment to the employee.

My questions have been answered. By signing below I agree to the procedure(s).

Patient or Representative Signature ▶ <u>Noah Leopold</u>	Date (mm-dd-yyyy) <u>8/17/23</u>	Time (h:mm) <u>11:34</u>	<input checked="" type="checkbox"/> am <input type="checkbox"/> pm
Representative Printed Name (First, Middle, Last) <u>Noah Leopold</u>			
Relationship to Patient <u>Patient</u>			

ENTERPRISE: Applies to Mayo Clinic locations in Arizona, Florida, Rochester and Mayo Clinic Health System.
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MC3999rev1221



SURGCT



07/10/2023 - Patient Message in William J. von Liebig Center for Transplantation and Clinical Regeneration in Rochester, Minnesota (continued)

Documents*** (continued)

Page 1 of 8 mc1891-127

MAYO CLINIC

PATIENT EDUCATION

Donors Who Meet Risk Criteria

TRUST DONOR LIFE
HOPE GIFT
CARING HEALTH FAMILY

BARBARA WOODWARD LIPS
PATIENT EDUCATION CENTER



07/10/2023 - Patient Message in William J. von Liebig Center for Transplantation and Clinical Regeneration in Rochester, Minnesota (continued)

Documents*** (continued)

Page 3 of 8 mc1891-127

What does it mean if an organ donor meets risk criteria?

Donors who meet any risk criteria as defined by the 2020 U.S. Public Health Service Guidelines (PHS) may have risk for acute infection of:

- Human immunodeficiency virus (HIV)
- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)

The risk depends on the donor's behaviors. Information about donor behaviors may come from review of the donor's medical and social history, physical examination and laboratory tests.

The donor is considered to meet risk criteria if any of the following are identified during the assessment:

- Sex (any method of sexual contact, including vaginal, anal and oral) with a person known or suspected to have HIV, HBV or HCV infection.
- Man who has had sex with another man.
- Sex in exchange for money or drugs.
- Sex with a person who had sex in exchange for money or drugs.
- Drug injection for nonmedical reasons.
- Sex with a person who injected drugs for nonmedical reasons.
- Incarceration (confinement in jail, prison or juvenile correction facility) for 72 consecutive hours or more.



07/10/2023 - Patient Message in William J. von Liebig Center for Transplantation and Clinical Regeneration in Rochester, Minnesota (continued)

Documents*** (continued)

Page 4 of 8 mc1891-127

- Child breastfed by a woman with HIV infection.
- Child born to a woman with HIV, HBV or HCV infection.
- Unknown medical or social history.

Why would you want to accept an organ from a donor who meets risk criteria?

The organ has a very low chance of being infected with HIV, HBV or HCV, even if the donor meets risk criteria. Accepting this type of organ could help prolong your life or improve your quality of life.

Other reasons you may want to accept an organ from a donor who meets risk criteria include:

- You may have a higher chance of survival by accepting organs from donors with risk criteria compared with waiting for an organ from a donor without risk criteria.
- Organs that meet risk criteria often come from younger donors. An organ from a younger donor may last longer than one from an older donor.
- You will be tested for HIV, HBV and HCV infections after the transplant. If you test positive after your transplant, there are effective treatments available.



Leopold, Noah
MRN: 7-451-896, DOB: 10/10/1982, Sex: M
Visit date: 7/3/2023

07/03/2023 - Documentation in William J. von Liebig Center for Transplantation and Clinical Regeneration in Rochester, Minnesota

Visit Information

Provider Information

Encounter Provider

Boilson, Barry A, M.D.

Department

Name	Address	Phone	Fax
William J. von Liebig Center for Transplantation and Clinical Regeneration in Rochester, Minnesota	200 1ST ST SW Rochester MN 55905-0001	800-422-6296	507-266-0731

Clinical Notes

Outpatient Summary

Outpatient Summary by Boilson, Barry A, M.D. at 7/3/2023 4:50 PM

Author: Boilson, Barry A, M.D. Service: TXP Heart Author Type: Physician
Filed: 7/4/2023 6:16 PM Encounter Date: 7/3/2023 Status: Signed
Editor: Boilson, Barry A, M.D. (Physician)
Related Notes: Original Note by Boilson, Barry A, M.D. (Physician) filed at 7/3/2023 4:57 PM

We discussed Mr. Leopold's case at the Multidisciplinary Heart Transplant Selection Conference this morning, and I telephoned Mr. Leopold this afternoon regarding the outcome of that discussion.

There was unanimous agreement among those participating in the discussion, transplant cardiologists and transplant surgeons, that he would be best served at this point by moving forward with cardiac transplantation. This is based on the severe abnormalities noted in his hemodynamics at this point, which identify a very low cardiac index in the setting of very high filling pressures.

He has also been seen by the Liver Transplant Team, who will be discussing Mr. Leopold's case later this week.

Given the advanced fibrosis which he has had on biopsies, we would favor consideration of combined heart-liver transplant. We will await the final determination by the Liver Team.

Miscellaneous points identified were need for updated pulmonary function tests and also an updated Pulmonology consult, given the findings of obstructive lung physiology on the previous pulmonary function testing in 2018.

Also reviewed the elevated parathyroid hormone, and Endocrinology consultation is recommended for that.

Noah asked whether he should have an updated OMS review. Note that he had wisdom teeth extraction here at Mayo in 2019. He has not had any new dental issues since then.

We will also ensure that he is up to date on his immunizations.

In all, we would recommend having him return for these consultations within the next month, and once those are completed, moving forward with repeat hemodynamic catheterization and then admission to the hospital directly, and based on these hemodynamics, he would be initiated on inotrope plus/minus intra-aortic balloon pump support.

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018

Letter transcribed on 17-Nov-2014 by Putzier, Stephanie Lynn

Barry A. Boilson, M.D.

Cardiothoracic Transplantation

November 17, 2014

Mr. Noah Leopold
Apartment 1004
111 Eighth Avenue, SE
Fort Lauderdale, FL 33301-2036

RE:Mr. Noah Leopold
MC#:7-451-896
DOB:1982-10-10

Dear Mr. Leopold:

This letter is to inform you that your case was discussed at the Cardiothoracic Transplant Selection Conference on Monday, November 17, 2014, with a diagnosis of restrictive myopathy: sec to radiat/chem. The consensus of the group was that at this time your case has been deferred from listing for heart transplant. You need follow up of liver and pulmonary nodules, are currently too well, and did not meet listing requirements. Once these issues have been resolved, or your condition worsens, we will again discuss your case, and we will notify you of our final decision.

Attached is a letter from the United Network for Organ Sharing (UNOS). It describes the services and information offered to patients by UNOS and the Organ Procurement and Transplantation Network.

If you have any questions about this process, please do not hesitate to contact us at 1-800-422-6296.

Sincerely,

Barry A. Boilson, M.D.

bab/slp
Enclosure
UNOS Patient Notification Letter

cc: Enrique Hanabergh, M.D.



Leopold, Noah
MRN: 7-451-896
DOB: 10/10/1982, Sex: M

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 13-Nov-2014
Mr. Noah Leopold

Consult

Printed: 19-Jan-2024 14:54 by User ID: M137083

Page 1 of 2

DEMOGRAPHIC INFORMATION

Clinic Number: 7451896
Patient Name:
Age: 32 Y
Birthdate: 10-Oct-1982 Sex: M
Address: 111 SE 8TH AVE APT 1004 City: FORT LAUDERDALE, FL 33301-2036

Service Date/Time: 13-Nov-2014 09:55
Provider: Barry A. Boilson, M.D. Pager: 127or7746751
Service: HLTCV Type/Dsc: CON Status: Fnl Revision #: 2

CHIEF COMPLAINT/PURPOSE OF VISIT

Mr. Leopold returns for a wrap visit at the time of this followup evaluation.

HISTORY OF PRESENT ILLNESS

To briefly summarize, he has a history of Adriamycin-induced cardiotoxicity following treatment for Ewing sarcoma at the age of seven. Since the age of 13, he has had a history of recurring heart failure. His current difficulties started late last year when he developed decompensated heart failure in the setting of recurring atrial fibrillation and in May underwent pulmonary vein isolation procedure. However, he remained in congestive heart failure and was seen and followed by his primary cardiologist, Dr. Enrique Hanabergh in Aventura, Florida, who referred him for consultation in the Heart Failure Clinic. He was seen by Dr. Karon who referred him for transplant evaluation. At the time I first saw Mr. Leopold, he was in class IV heart failure and had significant right-sided volume overload. We recommended having him return as soon as possible for evaluation, and he did return the following month and at that point appeared clinically better but still had a peak VO2 which was significantly reduced for his age at 15.9 mL/kg per minute representing 36% peak VO2 predicted. He also still had significant LV systolic dysfunction at 32% ejection fraction, although this had improved from June when we first saw him when it was 25%. The severe tricuspid valve regurgitation that he had initially in June had also improved when he came back in July and was now moderate to severe.

We identified several issues which required followup at the time of his evaluation in July, and he returned for further followup on those issues this time.

First of all, he does have a history of pulmonary nodules identified on CT and a history of recurring pneumothoraces. He has had a repeat CT scan of the chest this time, and he has been seen by Dr. John Scott in that regard. He does have a 1.1-cm ground-glass nodule in the right lower lobe dating back to 2009 which overall appears stable, but difficult to be absolute regarding that because the scan in 2009 was not a high-resolution scan. Dr. Scott and I discussed his case, and we can probably say that comparing the current scan to the previous scan in June, the findings are similar. The recommendation is to repeat a CT scan in six months' time. The lesion is too small for a needle biopsy to be performed safely and without resulting in an iatrogenic pneumothorax.

The second issue that we needed further follow up was that of nodule seen within the liver on MRI scanning. The lesions do not have the characteristic findings suggestive of HCC, but one of those does appear to have increased in size from 10 mm to 12 mm. He was seen by Dr. Kymberly Watt, and she has recommended reviewing his case at the tumor board to ensure unanimous agreement that this lesion does not have characteristic findings of HCC which is the current impression. The current recommendation is

This is a printout from the electronic medical record and is the most current version as of the date and time printed.

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 13-Nov-2014
Mr. Noah Leopold

Consult

Printed: 19-Jan-2024 14:54 by User ID: M137083

Page 2 of 2

for an MRI to be repeated in three months' time.

As outlined in my note from earlier this week, from a cardiac perspective, he appears to have improved further. His cardiopulmonary exercise test is now 20.8 mL/kg per minute for a peak VO₂, which represents 47% peak VO₂ predicted. The left ventricular ejection fraction is now 36%, and his right ventricular systolic function is now normal. There is still moderate to severe tricuspid valve regurgitation. There is still evidence of a PFO with a small left-to-right shunt at atrial level. The chest x-ray shows normalization of cardiac size at this point.

He has been seen by Dr. Frank Cetta who feels that unless we were planning to implant a transvenous pacemaker defibrillator, there would not be an indication at this point to close the PFO for hemodynamic reasons alone. It is a small shunt and is not causing any significant volume overload of the right side of the heart.

Regarding whether to place defibrillator, Dr. Bradley and I discussed his case, and given that his cardiac function genuinely appears to have improved and probably continues to do so, we feel that the risk of defibrillator placement right now, particularly given the need to close the PFO as well, would outweigh the potential benefits.

Copy

IMPRESSION/REPORT/PLAN

On balance, my recommendation to Noah at this point is to continue his current medications, notably the carvedilol and irbesartan, and I do not feel that these doses to be reduced despite the fact that the patient appears to be improving. Ideally, spironolactone should be continued as well. At this point, he appears euvolemic and can take furosemide on a p.r.n. basis if he exhibits signs of volume overload, specifically an increase in weight by more than 2 pounds in 24 hours or more than 5 pounds in a week. Other helpful signs would, of course, be evidence of abdominal swelling, lower extremity edema, or development of dyspnea on exertion, orthopnea, or PND.

I would recommend to Noah that should he experience any signs or symptoms of decompensation he should, of course, contact us, but also inform his local cardiologist, Dr. Hanabergh who has been following with him very closely and has given him superb care.

We will discuss his case on Monday. At this point, one could have equipoise regarding whether to list or not. Although based on cardiopulmonary exercise testing, his peak VO₂ still in a range where listing would be appropriate to consider, he does appear to be improving, and there are some outstanding issues that still need clarification, notably the need for repeat MRI in three months and a repeat CT scan in six months. I think we should follow him every three months regardless with a cardiopulmonary exercise test, echocardiogram, lab tests and additional imaging as required by our colleagues in Hepatology and Pulmonology.

I do think that although Mr. Leopold is improving currently, his clinical history has been quite tenuous, and that would be the main argument I would make for listing at this time. We will discuss on Monday, and I will be following up with Mr. Leopold at that point. All questions answered.

Original: BAB:tnb by bjbm

Electronically Signed: 24-Nov-2014 22:38 by B.A. Boilson

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Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 29-Sep-2014
Mr. Noah Leopold

Consult

Printed: 19-Jan-2024 14:56 by User ID: M137083

Page 1 of 2

DEMOGRAPHIC INFORMATION

Clinic Number: 7451896
Patient Name:
Age: 31 Y
Birthdate: 10-Oct-1982 Sex: M
Address: 111 SE 8TH AVE APT 1004 City: FORT LAUDERDALE, FL 33301-2036

Service Date/Time: 29-Sep-2014 19:01
Provider: Barry A. Boilson, M.D. Pager: 127or7746751
Service: HLTCV Type/Disc: CON Status: Fnl Revision #: 2

REVISION HISTORY

Jan-28-2015 14:22:49 - Modification to DIAGNOSIS

CHIEF COMPLAINT/PURPOSE OF VISIT

I had a telephone conference this evening with Mr. Leopold and his parents, Norman and Karen.

IMPRESSION/REPORT/PLAN

Recently, Mr. Leopold had a TEE performed at the request of Dr. Hanabergh which showed persistence of the PFO which measures approximately 0.6 mm in diameter but with continued evidence of shunting. At this time, the shunting appears primarily unidirectional. The recommendation of his providers locally are to proceed with closure and also to proceed with implantation of a defibrillator subsequently.

Noah has continued to research the details of his medical condition, and asks good questions, in particular as to whether the PFO could close spontaneously with his cardiac condition improved. I explained to Mr. Leopold that I am encouraged that between June and July, the previous visits I have had with him, there had been some improvement in his cardiopulmonary exercise testing and heart function, but his left ventricular ejection fraction remains in the range where a survival advantage for a defibrillator would be expected, and his performance on cardiopulmonary exercise testing remained in the range for transplant would offer the best outcome long-term rather than conventional medical therapy for his heart failure.

Based on our discussion on August 4, detailed in my miscellaneous note from that day, he will be due a followup visit in early November with testing as outlined in point number 6. This will include a visit with Congenital Cardiology, preferably Dr. Frank Cetta with whom I have discussed his case before. If we do find that his cardiac function has improved significantly and if the shunting across the PFO has decreased substantially, certainly an argument could be made for following a conservative approach. However, if not, we should plan on percutaneous closure of the PFO and subsequently implantation of a CRT-D device based on the patient's left bundle branch block and QRS duration of 130 msec. He would also have followup with Transplant Hepatology, Transplant Pulmonology with appropriate imaging, and with Transplant Psychiatry. We would then discuss his case again with a view to listing. All questions were answered.

DIAGNOSES

#1 Telephone conference

Original: BAB:bjm by kkw

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Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 28-Jul-2014
Mr. Noah Leopold

Consult

Printed: 19-Jan-2024 14:58 by User ID: M137083

Page 1 of 2

DEMOGRAPHIC INFORMATION

Clinic Number: 7451896
Patient Name:
Age: 31 Y
Birthdate: 10-Oct-1982 Sex: M
Address: 111 SE 8TH AVE APT 1004 City: FORT LAUDERDALE, FL 33301-2036

Service Date/Time: 28-Jul-2014 10:44
Provider: Barry A. Boilson, M.D. Pager: 127or7746751
Service: HLTCV Type/Disc: CON Status: Fnl Revision #: 2

CHIEF COMPLAINT/PURPOSE OF VISIT

Mr. Leopold returns for a wrap visit.

HISTORY OF PRESENT ILLNESS

At this point he has essentially completed his cardiac transplant workup. He has a few outstanding tests and appointments as yet which should be completed today and tomorrow. He is planning to travel home to Florida tomorrow night.

Please see my previous consultations with Mr. Leopold.

Overall, he does appear to have had some improvement in his cardiac status since I initially saw him in June. On echo, his left ventricular ejection fraction is better, is now 32% from 25% last month. The severity of tricuspid valve regurgitation has also decreased. He does have evidence of a bidirectional shunt at atrial level probably related to the transseptal puncture for his left atrial ablation in May unless there was a PFO pre-existing. His right ventricular systolic function appears normal.

Right heart catheterization showed a normal cardiac output at rest. PA saturation 72%. There was just mild elevation in filling pressures, right atrial pressure 11, pulmonary capillary wedge pressure of 12. There was evidence of shunting as shown in the echocardiogram with step up in saturations in the RA compared to the SVC at 73% compared to 58%.

On cardiopulmonary exercise testing, he also did better this time, but he still has evidence of significant cardiac output limitation with exercise. Peak VO2 15.9 mL/kg per minute, representing 36% pCO2 predicted. RER 1.26. Abnormal VO2 rise and O2 pulse rise in keeping with cardiac output limitation. We also note that he desaturated with exercise to 56% which although appears possibly spurious, before and afterward his saturations were 80% to 76%, respectively.

He was seen by Dr. Wylam from Transplant Pulmonology in view of his history of primary pneumothoraces in the left lung and review of chest CT findings demonstrating 15 to 20 parenchymal and surface blebs. The pulmonary function tests show an abnormal restrictive pattern. Possibly, there has been some restricted growth of the lung due to the effects of chemotherapy in earlier life, but the outside CTs have been requested and are now available in QREADS. I will bring that to the attention of Dr. Wylam so that he can review at his convenience.

Mr. Leopold had a liver biopsy repeated here. The findings do confirm bridging fibrosis with early nodularity, stage 3 to 4/4. He had a liver MRI performed for further evaluation of indeterminate lesions

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Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 28-Jul-2014
Mr. Noah Leopold

Consult

Printed: 19-Jan-2024 14:58 by User ID: M137083

Page 2 of 2

in the liver and kidneys which was inconclusive regarding their nature. Followup recommended in three months.

Transplant Nephrology is scheduled to see him. His iothalamate renal clearance is borderline at 48 mL/minute corrected for body surface area.

He has also been seen by Transplant Psychiatry. One of the major issues discussed was his ongoing alcohol use in the setting of established liver disease.

Mr. Leopold has voiced agreement with recommendations to abstain but has voiced that this would be challenging, and he has been set up with further appointments with Dr. Schneekloth.

IMPRESSION/REPORT/PLAN

#1 Transplant evaluation, Adriamycin-induced cardiomyopathy

Outstanding issues which need to be addressed are getting a final determination from Hepatology regarding whether or not concomitant liver transplant will be required. I do believe he is an appropriate candidate to be listed for heart transplant. Dr. Schneekloth will be seeing him and that will hopefully allow us to finalize his PACT score. Transplant Nephrology is scheduled to see him yet, but I do not think he will require renal transplant listing at this time, but I will defer to their opinion.

I will inform Dr. Wylam that the CTs are available for review. I would also welcome his input regarding the patient's desaturation on the treadmill exercise test. It may be due to the bidirectional shunting that he has, and input from Congenital Heart Disease might be helpful as well here.

DIAGNOSES

#1 Transplant evaluation, Adriamycin-induced cardiomyopathy

Original: BAB:arm by jas

Electronically Signed: 23-Aug-2014 15:41 by B.A. Boilson

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LEOPOLD

Noah

07-451-896

DOB: 10/10/1982 M

A



consent

COLLECT: CH9A

07/21/2014 12:23

ID: ka304

Initials:

(Mayo Clinic Number, Name, and Room Above)

MAYO
CLINIC
TO BE SCANNED
CONSENT

Patient Informed Consent for Evaluation as a Potential Candidate for Transplant

The physician has discussed the following with me in preparation for an evaluation as a potential candidate for transplant:

- The evaluation process
- The surgical procedure
- Alternative treatments
- Potential medical or psychosocial risks
- National and center specific outcomes from the most recent Scientific Registry of Transplant Recipients (SRTR) center-specific report, including the transplant center's observed and expected 1-year patient and graft survival, national 1-year patient and graft survival
- Notification about all Medicare outcome requirements not being met by the transplant center
- Organ donor risk factors that could affect the success of the graft or health of the patient
- My right to refuse transplantation
- If my transplant is not provided in a Medicare-approved transplant center it could affect the transplant recipient's ability to have my immunosuppressive drugs paid under Medicare Part B.

My questions have been answered by the physician. I give my consent to proceed with the evaluation.

Noah Leopold

Potential Candidate Printed Name

Candidate Signature

Barry A. Boulton

Physician Printed Name

Physician Signature

7-451-896

Mayo Clinic Number

7/21/2014

Date (Month DD, YYYY)

7/21/2014

Date (Month DD, YYYY)



Leopold, Noah
MRN: 7-451-896
DOB: 10/10/1982, Sex: M

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 13-Jun-2014
Mr. Noah Leopold

Miscellaneous

Printed: 19-Jan-2024 15:02 by User ID: M137083

Page 1 of 1

DEMOGRAPHIC INFORMATION

Clinic Number: 7451896
Patient Name:
Age: 31 Y
Birthdate: 10-Oct-1982 Sex: M
Address: 111 SE 8TH AVE APT 1004 City: FORT LAUDERDALE, FL 33301-2036

Service Date/Time: 13-Jun-2014 18:14
Provider: Barry A. Boilson, M.D. Pager: 127or7746751
Service: HLTCV Type/Disc: MIS Status: Fnl Revision #: 3

REVISION HISTORY

Jul-11-2014 11:21:47 - Modification to Event Type

Jul-16-2014 10:01:50 - Modification to DIAGNOSIS

IMPRESSION/REPORT/PLAN

I received a message from Katrina Hodges, transplant evaluation coordinator, that Mr. Leopold called wondering if Noah needs to come urgently, but that his father would prefer making arrangements to come on July 14. I attempted to reach Mr. Leopold this evening, but he was unavailable. I left a voice message to the effect that as I and Dr. Karon had stated before, we are keen to get Noah evaluated for transplantation as soon as possible, as if we wait too long, he could develop irreversible end-organ damage and be non-transplantable. If July 14 would work for Noah and his family, we will be more than happy to make the arrangements. I have asked Mr. Leopold to call us to confirm on Monday if possible.

DIAGNOSES

#1 Likely diagnosis of Adriamycin-induced cardiomyopathy

Original: BAB:rdh by amw
Electronically Signed: 17-Jul-2014 09:08 by B.A. Boilson

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Leopold, Noah
MRN: 7-451-896
DOB: 10/10/1982, Sex: M

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 12-Jun-2014
Mr. Noah Leopold

Miscellaneous

Printed: 19-Jan-2024 15:02 by User ID: M137083

Page 1 of 1

DEMOGRAPHIC INFORMATION

Clinic Number: 7451896
Patient Name:
Age: 31 Y
Birthdate: 10-Oct-1982 Sex: M
Address: 111 SE 8TH AVE APT 1004 City: FORT LAUDERDALE, FL 33301-2036

Service Date/Time: 12-Jun-2014 18:04
Provider: Barry A. Boilson, M.D. Pager: 127or7746751
Service: HLTCV Type/Disc: MIS Status: Fnl Revision #: 3

IMPRESSION/REPORT/PLAN

I received an InBox message from our secretarial staff that Noah's father, Norman, called asking if one of our psychiatrists could call Noah and visit with him over the phone. He did not actually visit with a psychiatrist here during our brief visit with him. I have returned a call to Noah's father but was unable to reach him and left a message to the effect that I will convey his message to our Psychiatry Team and see if they would feel comfortable visiting with him over the phone. I did explain that given that they have not actually met with him, this places them at a little bit of a disadvantage in terms of giving recommendations. However, I did reiterate the importance of Noah proceeding with an evaluation in the near future as both myself and Dr. Karon who referred him are very concerned that his condition could deteriorate very soon to the point of being nontransplantable.

Copy

Copy

Original: BAB:kjm by bab
Electronically Signed: 01-Jul-2014 22:34 by B.A. Boilson

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Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018

Letter transcribed on 10-Jun-2014 by Fleming, Kirsten J

Barry L. Karon, M.D.
Division of Cardiovascular Diseases
Department of Internal Medicine

June 10, 2014

Enrique S. Hanabergh, M.D.
21110 Biscayne Boulevard
Aventura, FL 33180

RE:Mr. Noah Leopold
MC#:7-451-896
DOB:1982-10-10

Dear Dr. Hanabergh:

Thank you for referring Mr. Noah Leopold to Mayo Medical Center. I am writing with summary of his evaluation; I understand that you already spoke with Dr. Barry Boilson from the Transplant Group on the telephone regarding Noah.

Noah has severe biventricular cardiomyopathy with resultant severe tricuspid regurgitation (non-coaptation of the tricuspid valve). These combine to put him in a low output state. His cardiac index at rest by noninvasive measures is less than 1.5 L/min/m² and his peak oxygen consumption of 14 mL/kg/min put him at 32 percent of predicted.

We strongly advised him that his best course would be to begin active evaluation for heart transplantation. Although we were not able to have him seen by our Liver Transplant Team within the time available, we suspect that he might need dual organ transplant at this time. In addition, he has grade 2 chronic kidney failure (cardiorenal most likely), and as time plays forward, he may well develop enough renal dysfunction that he would even need evaluation for triple organ transplantation. It would be reasonable also to consider him for an ICD for primary prevention while going through this process.

Both Dr. Boilson and I tried to answer Noah's questions as best as possible. He is focused on the realities of everything that would come with a transplant evaluation as well as the prospect of either being an outpatient on inotropes or an inpatient on dual inotropes. He is not very interested in any of this, especially as he is getting around currently as an outpatient. We tried to emphasize the bigger picture where evaluation takes time, waiting for organs takes time, and patients unfortunately can either die waiting for an organ or deteriorate to the point where they are no longer a transplant candidate. Ultimately the Leopold's returned home for further considerations.



Leopold, Noah
MRN: 7-451-896
DOB: 10/10/1982, Sex: M

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018

Please contact Dr. Boilson or me if there is further information you need which is not included in the enclosed documents.

Sincerely,

Barry L. Karon, M.D.

blk/kjf
Enclosures

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018

Letter transcribed on 10-Jun-2014 by Webb, Amy Marie

Barry A. Boilson, M.D.

Cardiothoracic Transplantation

June 10, 2014

Enrique Hanabergh, M.D.
21110 Biscayne Blvd
Aventura, FL 33180

RE:Mr. Noah Leopold
MC#:7-451-896
DOB:1982-10-10

Dear Dr. Hanabergh:

I recently had the pleasure of seeing your patient, Mr. Noah Leopold, in the Heart & Lung Transplant Clinic for evaluation. The following is a brief summary of the significant findings during this evaluation.

He has now had a cardiopulmonary exercise test which confirms significant functional limitation due to poor cardiac output. Peak VO₂ is 14 mL/kg per minute, representing 32% peak VO₂ predicted. VO₂ rise and O₂ pulse rise were abnormal. Peak RER of 1.08. Resting blood pressure 98/60, peak 118/50. Resting heart rate 98 beats per minute, peak 120 beats per minute.

ECG--sinus rhythm, first-degree AV block, PR interval 210 ms. Markedly blunted anterior R-wave progression with intrinsic QRS prolongation with a left bundle-type pattern. Total duration 130 ms. No significant repolarization abnormalities.

Chest x-ray--globular cardiomegaly with prominence of the right heart contour. Mild pulmonary vascular congestion.

Lab tests--hemoglobin 15.9 g/dL; platelets 163,000; leukocytes 7100; INR 1.4; sodium 136; potassium 4.2; creatinine 1.6 mg/dL; BUN 29 mg/dL; N-terminal BNP 1576 pg/mL; total cholesterol 175; triglycerides 250; HDL 28; LDL 97 mg/dL.

Serum protein electrophoresis--no monoclonal protein identified. Serum albumin 3.8 g/dL, TSH 6.6 mU/L, magnesium 2.2 mg/dL.

Overnight oximetry is abnormal, with oxygen saturations below 90%, 13.8% of the time.

He has had pulmonary function tests performed which show gas transfer capacity 55% predicted; FEV₁ 2.62, 67% predicted; and vital capacity 3.16, 67% predicted.

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018

CT chest--indeterminate bilateral pulmonary nodules, small amount of pericardial fluid. Mild upper abdominal ascites.

Echocardiogram--left ventricular ejection fraction 25% with normal LV chamber size. Moderate decrease in right ventricular systolic function, with incomplete tricuspid valve coaptation and severe tricuspid valve regurgitation. RVSP 33 mm Hg at a systemic pressure of 118/74. By TVI, the cardiac index was estimated at 1.19 L/min per m2.

[o] Likely diagnosis of Adriamycin-induced cardiomyopathy

[o] Biventricular dysfunction, presented with predominantly right heart failure

[o] Outside diagnosis of secondary cardiac cirrhosis, confirmed on liver biopsy

[o] Low-output state, peak VO2 32% predicted on cardiopulmonary exercise testing

[o] Renal impairment, likely cardiorenal due to low cardiac output

[o] Remote history of Ewing sarcoma, treated with chemotherapy and surgery

[o] Blood group A

Mr. Leopold presents with advanced heart failure by history and clinical exam, predominantly with right-sided decompensation. His cardiopulmonary exercise test confirms significant functional limitation due to low cardiac output. The echocardiogram and clinical exam suggest a low-output state with profound RV dysfunction. I have discussed the findings with the patient, his parents, and his home cardiologist in the clinic and through telephone conferencing. I think he should commence a transplant workup with a view to assessing his candidacy for cardiac replacement therapy. Given the outside diagnosis of cirrhosis, at this point in time, I suspect he will need dual heart-liver transplant, but we need to obtain the biopsy reports and the slides and have him seen by our transplant hepatologists here. His renal function is impaired, but this is probably due to a low-output state and would hopefully improve with restoration of normal cardiac output. However, he will require further evaluation with a renal ultrasound and iothalamate renal clearance to ascertain whether or not there is also intrinsic irreversible renal disease that could warrant consideration of kidney transplant as well. He is apparently blood group A, although this needs to be confirmed on testing here. I have discussed with Mr. Leopold that this would portend a long wait time to transplant and that given the severity of his illness, we would favor moving toward listing as 1B or 1A. I discussed in broad terms what this meant in terms of the need for inotropic support versus mechanical support and the need for hospitalization to get these established. We also discussed potentially the need for longer-term hospitalization to wait for transplant if he became sicker.

At this point in time, the most important decision that Mr. Leopold and his family need to make is, first of all, whether they feel ready to proceed

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018

with transplant evaluation right now and, secondly, where. In that regard, Dr. Enrique Hanabergh was party to our discussion and did recommend to Noah that he strongly consider proceeding with evaluation here. To that end, we could certainly go ahead and get this ordered for him once he gives us his consent to proceed. I have given him the transplant evaluation paperwork, which includes our outcomes as compared to nationally and expected and also details of the transplant workup itself. This also includes the consent form. I have given Mr. Leopold my card, and he plans to call me tomorrow regarding his decision. Toward the end of the workup, we will obtain the right heart catheterization, as I anticipate this will show significantly low cardiac output, and if at that point the patient has committed to transplant listing and no contraindications to listing have been identified on the workup thus far, we could go ahead with a trial of inotropic support or even consideration of mechanical support. It was a pleasure to meet with Mr. Leopold today. I subsequently had the opportunity to review his case with Dr. Barry Karon, who referred him to us, and he is in agreement.

Enclosed is the clinical documentation which summarizes our impressions and recommendations (Boilson, Barry A: Jun-6-2014). I have also included the most recent echocardiography, laboratory results reports, and medication list.

I appreciate the opportunity to participate in Mr. Leopold's care. If you should have any questions regarding this evaluation, please feel free to contact me.

Sincerely,

Barry A. Boilson, M.D.

bab/amw
Enclosures

cc: Mr. Noah Leopold

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy

Cardiovascular Congestive Heart Failure

7-451-896 06-Jun-2014

Subsequent Visit

Mr. Noah Leopold

Printed: 19-Jan-2024 15:02 by User ID: M137083

Page 1 of 1

DEMOGRAPHIC INFORMATION

Clinic Number: 7451896
Patient Name:
Age: 31 Y
Birthdate: 10-Oct-1982 Sex: M
Address: 111 SE 8TH AVE APT 1004 City: FORT LAUDERDALE, FL 33301-2036

Service Date/Time: 06-Jun-2014 16:22
Provider: Barry L. Karon, M.D. Pager: 127or7746335
Service: CVCHF Type/Disc: SV Status: Fnl Revision #: 4

CHIEF COMPLAINT/PURPOSE OF VISIT

Review tests and consultations.

IMPRESSION/REPORT/PLAN

I had a 35 minute face-to-face counseling session with Noah and his father.

I shared my opinion, which reiterated the opinion expressed by Dr. Boilson yesterday. I think that he is on a "slippery slope" with failing liver, low output state, and possibly more severe kidney dysfunction in the near future. We believe that his only chance would be heart transplantation, and we have offered to initiate a transplant evaluation. He would need to see the Transplant Liver Team for evaluation and opinion about need for dual organ transplant.

The rest of our session was spent primarily answering Noah's questions for Noah. He is concerned about committing to everything entailed with the transplant. I answered questions as best I could about outcomes as well as what would be involved in terms of listing status, need for inotropes, need for defibrillator if he was 1B outpatient. I discussed with them the different waiting time for organs in Minnesota compared to other places such as southern Florida. I explained why a tricuspid valve operation would not be indicated.

In the end, Noah is unconvinced that he wants to proceed with this. I tried to gently advise him that he is focusing on the reality of the short-term picture but not grasping the big picture in which he runs a substantial risk of becoming non-transplantable and dying due to delay in proceeding.

DIAGNOSES

- #1 Severe biventricular heart failure with low output state, stage C, NYHA class IIIB
- #2 Dilated cardiomyopathy attributed to chemotherapy
- #3 Tricuspid valve non-coaptation, severe tricuspid regurgitation, significantly contributing to #1
- #4 Hepatic dysfunction, likely cardiac cirrhosis (not fully evaluated here)
- #5 Chronic kidney failure, stage II, likely cardiorenal syndrome
- #6 H/O spontaneous pneumothoraces
- #7 H/O atrial fibrillation s/p unspecified ablation procedure e/w 2014; currently sinus rhythm

Original: BLK:tak by blk

Electronically Signed: 10-Jun-2014 07:29 by B.L. Karon

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Leopold, Noah
MRN: 7-451-896
DOB: 10/10/1982, Sex: M

Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 06-Jun-2014
Mr. Noah Leopold

Miscellaneous

Printed: 19-Jan-2024 15:02 by User ID: M137083

Page 1 of 1

DEMOGRAPHIC INFORMATION

Clinic Number: 7451896
Patient Name:
Age: 31 Y
Birthdate: 10-Oct-1982 Sex: M
Address: 111 SE 8TH AVE APT 1004 City: FORT LAUDERDALE, FL 33301-2036

Service Date/Time: 06-Jun-2014 13:51
Provider: Barry A. Boilson, M.D. Pager: 127or7746751
Service: HLTCV Type/Desc: MIS Status: Fnl Revision #: 1

IMPRESSION/REPORT/PLAN

I spoke with Mr. Leopold's father Norman. As a family, they have decided to return home and to digest the information given. They do plan to return in the near future for transplant evaluation. I look forward to hearing from them.

Original: BAB:kjm
Electronically Signed: 01-Jul-2014 22:33 by B.A. Boilson

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Documents, Notes, and Images

Dates Searched 1/1/1900 to 5/4/2018



Clinical Document Copy Heart & Lung Transplant-Cardiology

7-451-896 05-Jun-2014
Mr. Noah Leopold

Consult

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Page 3 of 4

Mr. Leopold presents with advanced heart failure by history and clinical exam, predominantly with right-sided decompensation. His cardiopulmonary exercise test confirms significant functional limitation due to low cardiac output. The echocardiogram and clinical exam suggest a low-output state with profound RV dysfunction. I have discussed the findings with the patient, his parents, and his home cardiologist in the clinic and through telephone conferencing. I think he should commence a transplant workup with a view to assessing his candidacy for cardiac replacement therapy. Given the outside diagnosis of cirrhosis, at this point in time, I suspect he will need dual heart-liver transplant, but we need to obtain the biopsy reports and the slides and have him seen by our transplant hepatologists here. His renal function is impaired, but this is probably due to a low-output state and would hopefully improve with restoration of normal cardiac output. However, he will require further evaluation with a renal ultrasound and iothalamate renal clearance to ascertain whether or not there is also intrinsic irreversible renal disease that could warrant consideration of kidney transplant as well. He is apparently blood group A, although this needs to be confirmed on testing here. I have discussed with Mr. Leopold that this would portend a long wait time to transplant and that given the severity of his illness, we would favor moving toward listing as 1B or 1A. I discussed in broad terms what this meant in terms of the need for inotropic support versus mechanical support and the need for hospitalization to get these established. We also discussed potentially the need for longer-term hospitalization to wait for transplant if he became sicker.

At this point in time, the most important decision that Mr. Leopold and his family need to make is, first of all, whether they feel ready to proceed with transplant evaluation right now and, secondly, where. In that regard, Dr. Enrique Hanabergh was party to our discussion and did recommend to Noah that he strongly consider proceeding with evaluation here. To that end, we could certainly go ahead and get this ordered for him once he gives us his consent to proceed. I have given him the transplant evaluation paperwork, which includes our outcomes as compared to nationally and expected and also details of the transplant workup itself. This also includes the consent form. I have given Mr. Leopold my card, and he plans to call me tomorrow regarding his decision. Toward the end of the workup, we will obtain the right heart catheterization, as I anticipate this will show significantly low cardiac output, and if at that point the patient has committed to transplant listing and no contraindications to listing have been identified on the workup thus far, we could go ahead with a trial of inotropic support or even consideration of mechanical support. It was a pleasure to meet with Mr. Leopold today. I subsequently had the opportunity to review his case with Dr. Barry Karon, who referred him to us, and he is in agreement. All questions answered.

DIAGNOSES

- #1 Likely diagnosis of Adriamycin-induced cardiomyopathy
- #2 Biventricular dysfunction, presented with predominantly right heart failure
- #3 Outside diagnosis of secondary cardiac cirrhosis, confirmed on liver biopsy
- #4 Low-output state, peak VO2 32% predicted on cardiopulmonary exercise testing
- #5 Renal impairment, likely cardiorenal due to low cardiac output
- #6 Remote history of Ewing sarcoma, treated with chemotherapy and surgery
- #7 Blood group A

Original: BAB:vml by afc

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